

Michigan Residential Heating Oil and Propane Price Survey

2014-2015 Heating Season

This report summarizes the results of a survey of residential No. 2 distillate fuel oil (home heating oil) and propane (liquefied petroleum gas) prices over the 2014-2015 heating seasons in Michigan. The Michigan Public Service Commission (MPSC) conducted the survey under a cooperative agreement with the U.S. Department of Energy's (DOE) Energy Information Administration (EIA). This survey was funded, in part, by a grant from the EIA.

Michigan Residential Heating Oil and Propane Price Survey

2014-2015 SHOPP Report

Winter Snapshot

The winter season of 2014-2015 was milder than the year before even though it was colder than normal with very cold temperatures in November and at or above normal through December and January. The weather returned to very cold in February and March.

The high demand for propane during the colder months was readily met as the market had sufficient propane inventories. High stocks of propane, was in part due to propane dealers starting the heating season with more propane in storage, more propane under contract for the season and with more customers on budget and/or on Keep Full programs. Customers also heeded calls by the propane industry and the state to fill propane tanks during the summer, taking advantage of cheaper prices and securing supply before winter demand.

In addition to the propane inventories, the falling price of crude oil had an impact on the prices of propane and heating oil. Beginning in the fall of 2014, the price of crude oil began to drop steadily, followed by a steep fall leading to the price of a barrel of crude oil from just under \$93/bbl in the second week of September to under \$50/bbl by the first week in January where it hovered for the rest of the heating season. A prime reason for falling oil prices was an increase in U.S. production. Beginning in 2010/2011, oil production, particularly in the Bakken oil fields in North Dakota, started a steady climb. By December 2014, U.S. inventories, which had already been at the top of the five-year average for months, began to climb sharply reaching levels not seen in at least 80 years. The steady increase in inventory was further exacerbated by OPEC's decision in November 2014 not to cut production which led to steady fall in oil

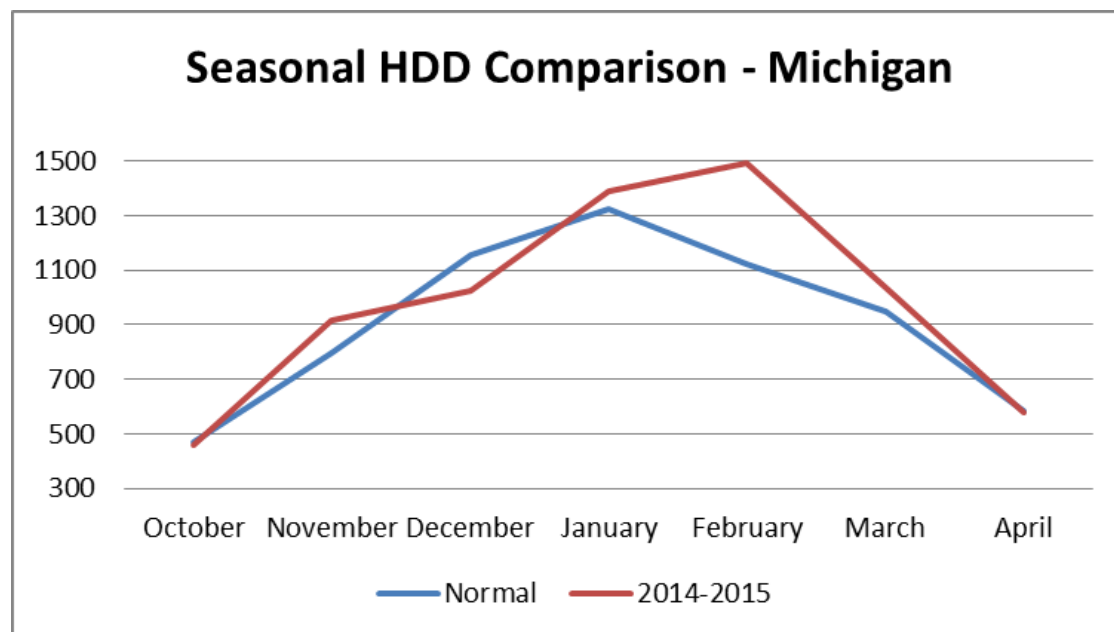
Highlights

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- Michigan's "Winter Heating Season" (Oct. – March) was nearly 9 percent colder than normal.
- High inventories, lower prices, and periods of moderate weather led to an uneventful heating season in Michigan.
- Propane prices averaged 19 percent lower than the 2013/14 winter season.
- Heating oil prices averaged 22 percent lower than the 2013/14 winter season.
- U.S. propane stocks ended the season (March 2, 2014) at 57.4 million barrels, well above the 5-year average for that period.

prices. The impact of the falling price of crude oil was to lower the price of both propane and heating oil and the effect of those lower prices are discussed below.

Heating oil did not experience any supply or serious price issues and remained obtainable all winter. Heating oil retains a smaller market share in Michigan, estimated at less than 2 percent.



Purpose of Survey

The State Heating Oil and Propane Survey (SHOPP), is designed to collect data on state-level stocks and residential prices of No. 2 heating oil and propane during the heating season. The data are used to monitor the prices of propane and heating oil during the winter season, in an effort to maintain awareness of any price or supply irregularities that may be developing.

Residential Propane Prices

As noted above, the price of propane is closely tied with the price of crude oil and the supply of propane is closely tied to available supplies of crude oil and as well as natural gas. Another factor in this year's lower prices and more ready availability of propane has been the fact that not only has there been an increase in crude oil production but there has also been a boom in natural gas production. Hydraulic fracturing of shale formations has led to a large increase in natural gas production which in turn has increased the inventories of propane as natural gas processing also produces propane.

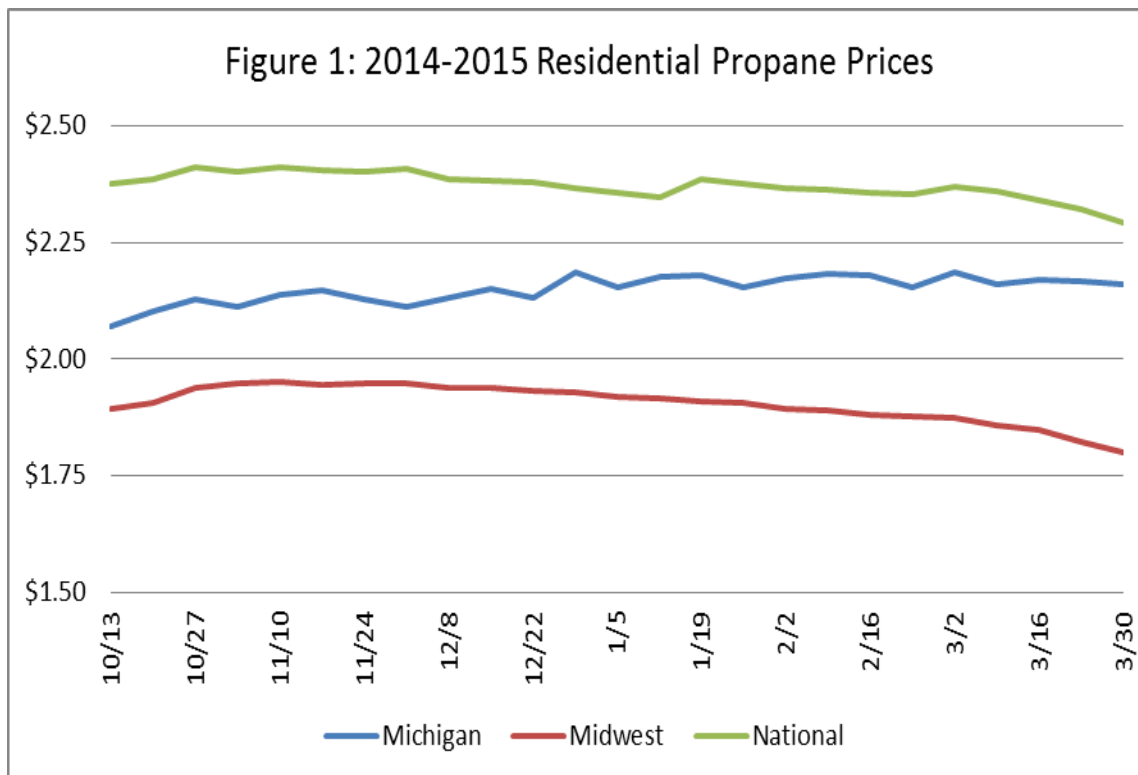
According to the EIA, about 6 percent of U.S. households heat with propane. In Michigan it is estimated to be closer to 9 percent, with more households served by propane than any other state in the country.

As seen in Figure 1, Michigan propane prices were consistently below the trend of national prices, but higher than the Midwest throughout the entire heating season.

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At the start of the 2014-2015 heating season, the weighted average residential price of propane in Michigan was \$2.07 per gallon, excluding the 4 percent state sales tax. This was only a nickel higher than the price a year ago. As seen in Figure 1 below, this price increased only by a minimal amount throughout the entire season with a “high” of only \$2.19 occurring in the last week in December. The average price of propane over the October to March Survey period was \$2.14 per gallon in Michigan, a decrease of almost 19 percent from the survey period in 2013-2014.



2014	10/13	10/20	10/27	11/03	11/10	11/17	11/24	12/01	12/08	12/15	12/22	12/29	
Michigan	2.07	2.10	2.13	2.11	2.14	2.15	2.13	2.11	2.13	2.15	2.13	2.19	
Midwest	1.89	1.91	1.94	1.95	1.95	1.94	1.95	1.95	1.94	1.94	1.93	1.93	
National	2.38	2.39	2.41	2.40	2.41	2.40	2.40	2.41	2.39	2.38	2.38	2.37	
2015	1/05	1/12	01/19	01/26	02/02	02/09	02/16	02/23	03/02	03/09	03/16	03/23	03/30
Michigan	2.15	2.18	2.18	2.15	2.17	2.18	2.18	2.15	2.14	2.13	2.13	2.11	2.11
Midwest	1.92	1.92	1.91	1.91	1.90	1.89	1.88	1.88	1.88	1.86	1.85	1.82	1.80
National	2.36	2.35	2.39	2.38	2.67	2.36	2.36	2.35	2.37	2.36	2.34	2.32	2.29

Propane supply

As shown in Figure 2, the heating season began with U.S. propane stocks well above the five-year average range unlike the previous year when propane stocks were well below the five-year average. According to EIA, US propane inventory stood at approximately 81 million barrels at the beginning of the heating season in 2014, about 15 million barrels more than propane stocks one year earlier. U.S. propane stocks remained above the five year-range throughout the winter and at the close of the heating season on March 30, 2015, propane stocks were 57.4 million barrels, almost 116 percent higher than they had been at the same time the previous year.

Figure 2: U.S. Propane Stocks

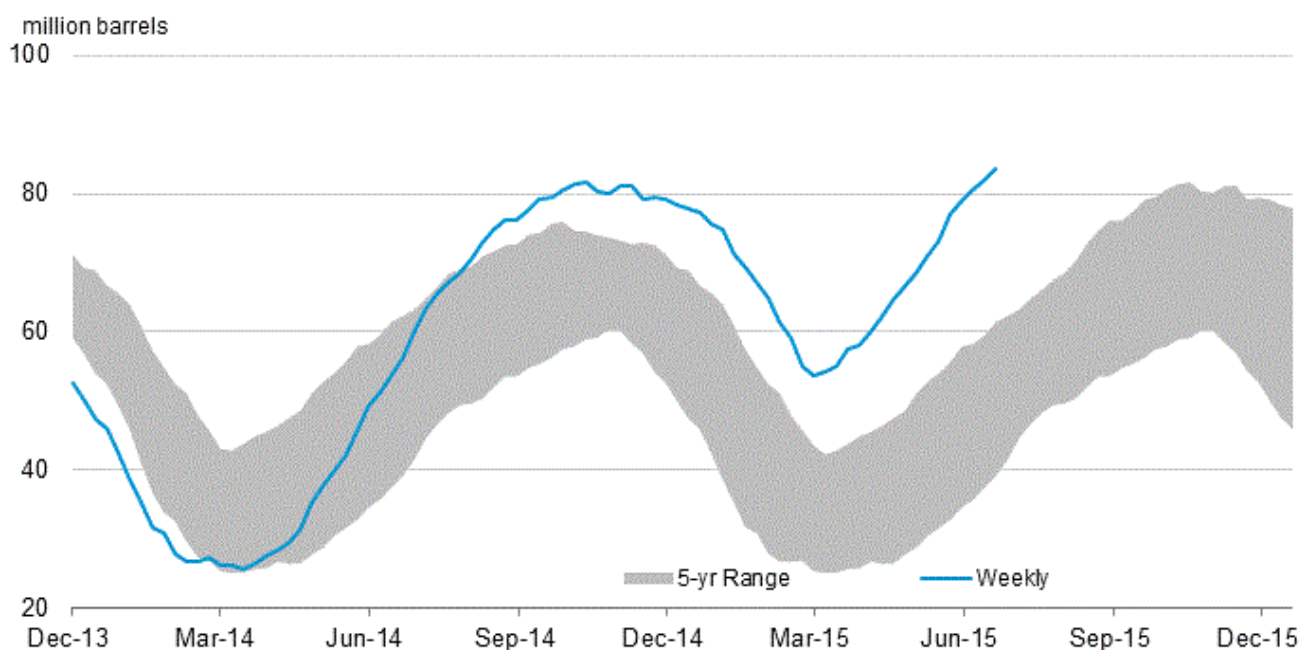
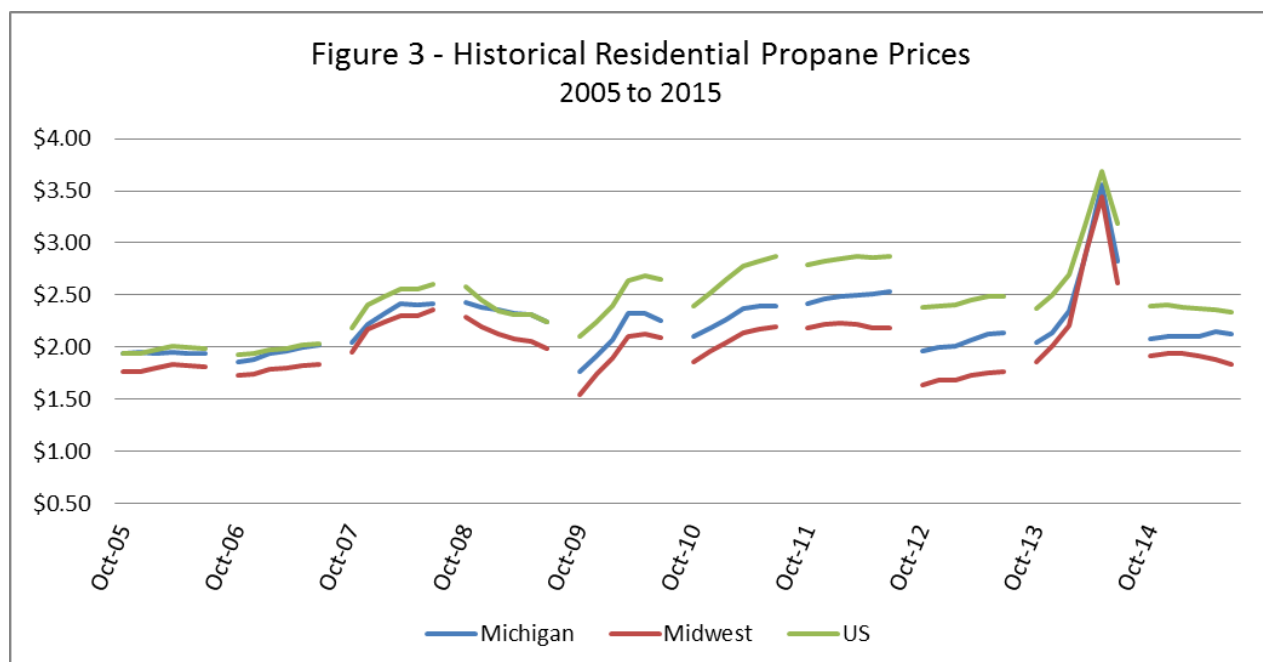


Figure 3 shows the pattern of monthly average propane prices over the previous ten heating seasons. Prices in Michigan and the Midwest region have gradually diverged from the U.S. average due to the availability of less expensive crude oil, sourced from Canada and the Bakken formation in North Dakota. In addition, increased natural gas production has also put downward pressure on overall U.S. prices. It is estimated that over half of propane supply is now sourced from natural gas processing facilities. In the past, supply was at least 50 percent from crude oil refining operations which resulted in increased volatility and higher prices.



Residential No. 2 Heating Oil Prices

In Michigan, heating oil usage has gradually been supplanted by natural gas and propane, and now represents less than 2 percent of the heating fuels market in Michigan. While heating oil and diesel fuel are closely related products, No. 2 heating oil is not subject to the same environmental requirements or motor fuel taxes placed on diesel fuel. Historically, heating oil prices have fluctuated a bit, frequently tracking the price of crude oil and are generally higher during the winter months when demand is higher.

As shown in Figure 4, heating oil prices in Michigan closely matched, sometimes a little higher and sometimes a little lower, those found throughout the Midwest. National prices were somewhat higher than both Michigan and the Midwest.

The price for heating oil for the 2014-2015 Michigan winter heating season started at \$3.29 per gallon, excluding the 4 percent sales tax, and, unusually, fell throughout much of the season, rallying a little higher in late February and early March before continuing to drop. The price of heating oil at season's end was 86 cents per gallon cheaper than in October. It is much more typical for the price hearing oil to be higher at the end of the heating season than it was at the beginning. This heating oil price drop can be directly attributed to the drop in crude oil prices. By the end of the heating season on March 30, 2015, Michigan's average price was \$2.43 per gallon. The average price of heating oil in Michigan over the course of the season was \$2.85 per gallon, 80 cents (22 percent) lower than last season.

Michigan Residential Heating Oil and Propane Price Survey

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2014	10/13	10/20	10/27	11/03	11/10	11/17	11/24	12/01	12/08	12/15	12/22	12/29	
Michigan	3.29	3.27	3.27	3.67	3.79	3.67	3.55	3.51	3.27	2.94	2.70	2.56	
Midwest	3.29	3.30	3.30	3.46	3.54	3.50	3.46	3.37	3.17	2.92	2.77	2.66	
National	3.52	3.48	3.45	3.44	3.42	3.38	3.36	3.33	3.22	3.14	3.08	3.04	
2015	1/05	1/12	01/19	01/26	02/02	02/09	02/16	02/23	03/02	03/09	03/16	03/23	03/30
Michigan	2.41	2.28	2.22	2.28	2.36	2.43	2.55	2.61	2.64	2.65	2.54	2.47	2.43
Midwest	2.53	2.43	2.36	2.34	2.36	2.44	2.56	2.59	2.61	2.60	2.54	2.49	2.42
National	2.97	2.91	2.84	2.82	2.80	2.91	3.04	3.19	3.29	3.21	3.03	2.93	2.89

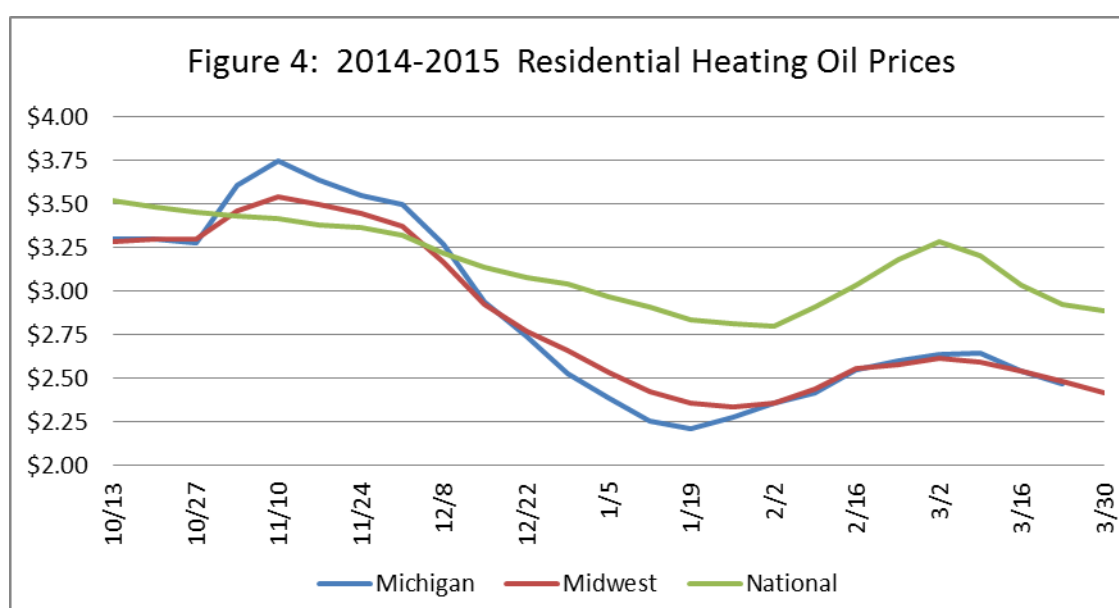
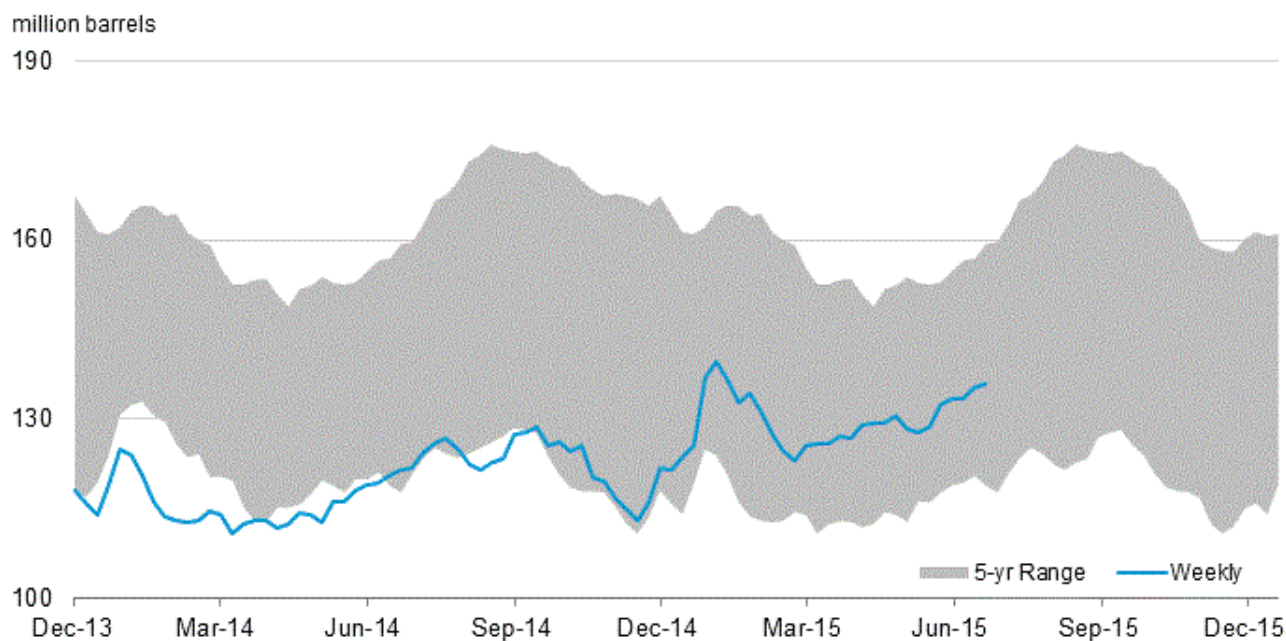


Figure 5 shows distillate inventory levels throughout the heating season. Total distillate stocks started the heating season near the bottom of the five-year range but by late December had risen to about the mid-point of that average. Supplies subsequently fell through the rest of the heating season yet remained close to the mid-point of the five-year average range, never falling below it as was the norm last heating season. The lowest inventories fell to was about 111 million barrels in the third week of November, like the same time period in 2013. However, stock levels then rebounded to 125 million barrels a month later and later hit a high of almost 140 million barrels in mid-January. This inventory level was actually quite surprising given the colder than normal weather Michigan saw this year, particularly in February, one of the coldest on record for much of Michigan.

Figure 5: U.S. Distillate Fuel Oil Stocks



Weather Summary

Figure 6 depicts the statewide temperature rankings for the United States from October 2014 – March 2015. Figure 7 shows the population weighted heating degree days for Michigan over the last five heating seasons. In Michigan, this past winter heating season (Oct - March) was approximately 9 percent colder than normal, but slightly warmer than the winter of 2013/2014 which was 14 percent colder than normal. The Midwest and the Northeast were the coldest regions of the country with Ohio being the record coldest state. The Western half of the U.S. experienced warmer than average temperatures with the far Western states experiencing record warm temperatures.



Figure 6: U.S. Temperature Ranks

Statewide Average Temperature Ranks
October 2014–March 2015
Period: 1895–2015

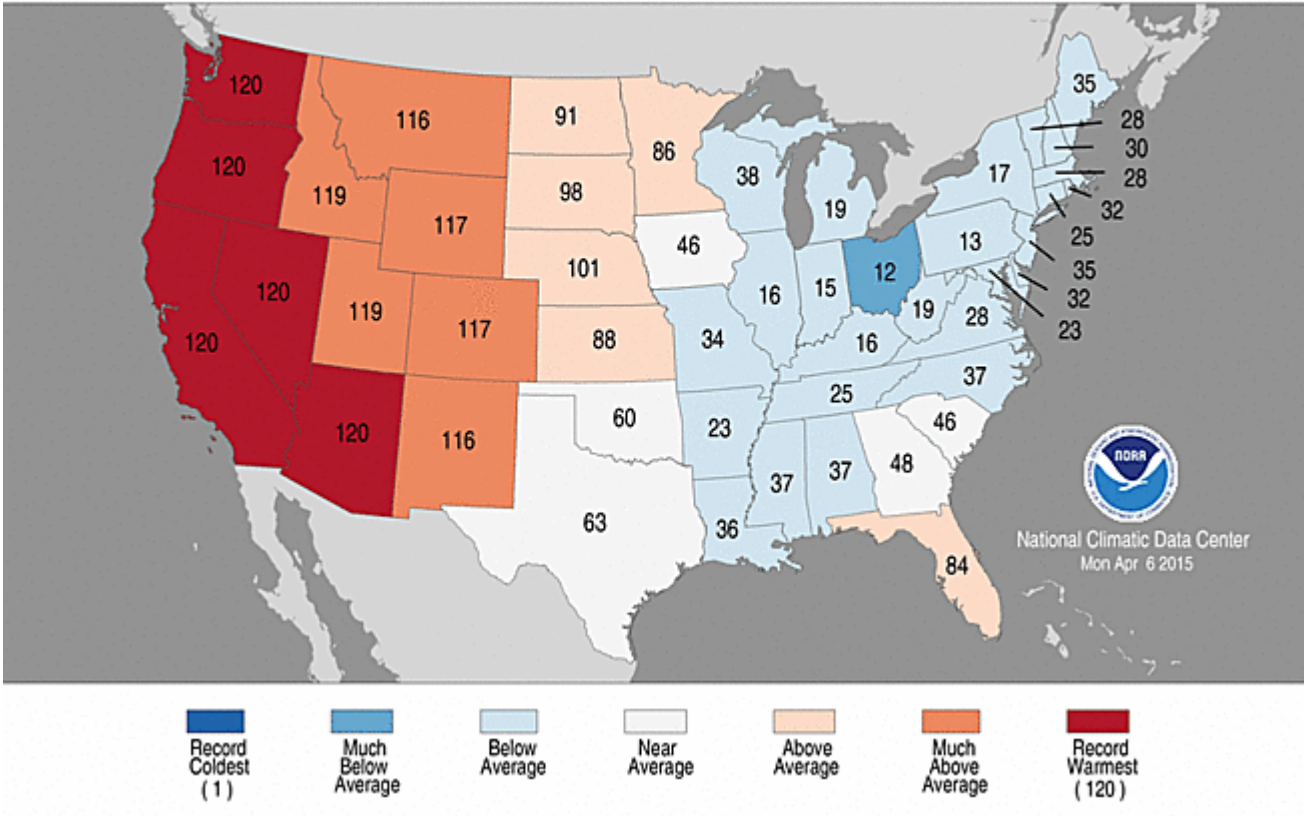
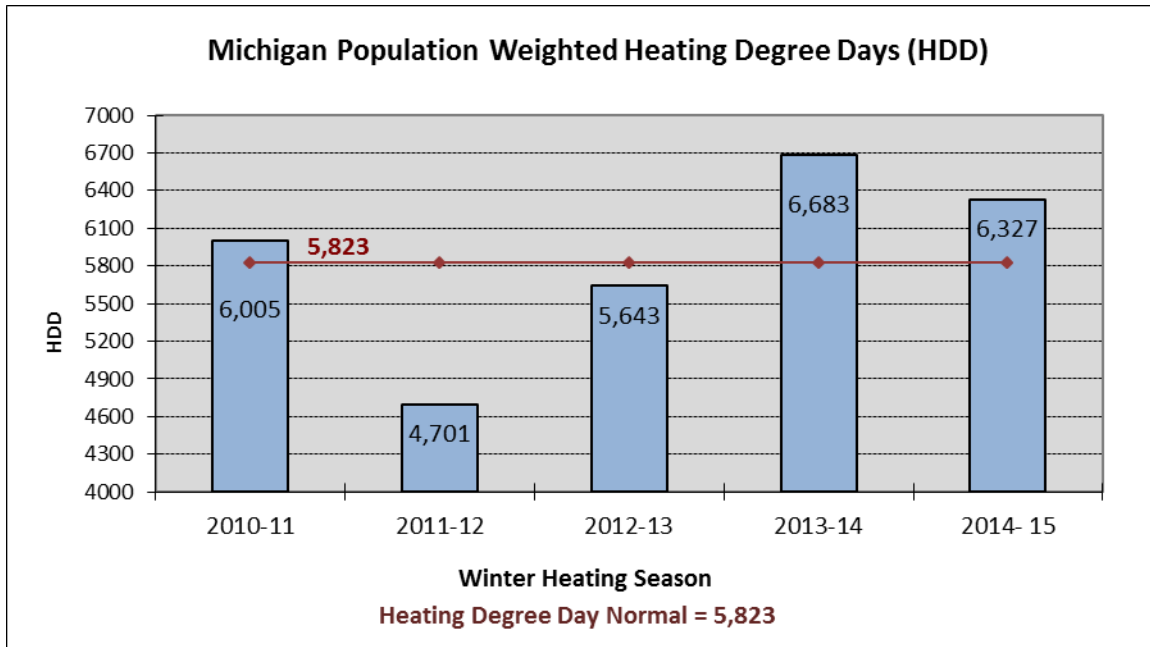




Figure 7: Michigan Heating Degree Days



Note: To provide a more accurate picture of winter heating demand, this chart has been revised to reflect only HDDs occurring during the Michigan winter heating season (October-March), as opposed to HDD totals for the entire year.



Methodology

The EIA provided the MPSC with a list of survey participants. The sampling frame for heating oil distributors was an established list of approximately 11,000 fuel oil dealers and distributors from Form EIA-863, "Petroleum Product Sales Survey" (1989). EIA officials used a one-way stratified sample design for Michigan based on No. 2 residential distillate sales volumes. Due to limited propane supplier information, EIA statisticians developed two strata for propane dealers – large, multi-state dealers comprised the first, and a random sampling comprised the second (many sources were used to collect the names and addresses for the random sampling). EIA officials selected 21 fuel oil distributors and 27 propane dealers to participate in the 2014-2015 survey for Michigan. The "Winter Fuels Explanatory Notes", a link to which is posted on the following page, contains detailed information on the sample design.

Survey Dates -- The MPSC conducted the survey weekly on each Monday or Tuesday beginning October 13, 2014 and ending March 30, 2015.

General Reporting -- The MPSC asked participants for the retail credit price charged to residential customers and verified changes from the reported price from the preceding survey. The No. 2 fuel oil residential price and the propane residential price are the credit prices paid for home delivery of 500 gallons. Reported prices excluded discounts and taxes. Participants reported prices to the nearest tenth of a cent (i.e., 0.895). The survey excluded sales to multi-family dwellings.

Electronic Filing -- EIA provided the MPSC with an electronic filing web form known as the EIA Survey Data Collection System. After collecting the data, MPSC staff uploaded it directly to EIA via a network connection to the Internet. Participants are listed alphabetically, identified by a seven-digit number, and prices are reported in dollars per gallon (i.e., \$1.795).

Distribution of Aggregated Data -- After collecting the data, EIA officials edited and aggregated the information with surveys from the other states. The EIA published the survey results on their Web site at <http://eia.doe.gov/>. For more information, visit this page or contact National Energy Information Center at (202) 586-8800.

Confidentiality of Reported Data -- Survey participation by fuel distributors is mandatory under the Federal Energy Administration Act of 1974 (Public Law 93-275). The EIA is responsible for assuring confidentiality of the data. Data on this form will be kept confidential and not disclosed to the public to the extent it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. Section 552, and other regulations. It may be released to the Department of Justice or to any other federal agency for official use, which may include enforcement of federal law. The information contained on this form may also be made available to any committee of Congress, the General Accounting Office, or other Congressional agencies authorized by law. A court of competent jurisdiction may obtain this information in response to an order.

Sources:

- 1) Residential Heating Oil Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

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- 2) Wholesale Heating Oil Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

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- 3) Residential Propane by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

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- 4) Wholesale Propane Prices by Region and State, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

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- 5) Winter Fuels Explanatory Notes, DOE/EIA-0208 (2008-15), *Weekly Petroleum Status Report*,

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